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L1: Entry 166 of 13969   File: USPT   Jun 26, 2001

US-PAT-NO: 6252605
DOCUMENT-IDENTIFIER: US 6252605 B1

TITLE: System and method for packing spatial data in an R-tree

DATE-ISSUED: June 26, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Beesley; Darin J.	Kansas City	MO	N/A	N/A
Robinson; Stephen C.	Olathe	KS	N/A	N/A
Walters; Thomas H.	Gardner	KS	N/A	N/A

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Garmin Corporation	N/A	N/A	N/A	TWX	03

APPL-NO: 8/ 905297
DATE FILED: August 1, 1997

INT-CL: [7] G06F 15/00
US-CL-ISSUED: 345/441
US-CL-CURRENT: 345/441
FIELD-OF-SEARCH: 345/441, 345/442, 345/440, 345/433, 345/419, 345/117, 345/121

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| Search Selected | | Search ALL |

PAT-NO	ISSUE-D	PATENTEE-NAME	US-CL
D365032	December 1995	Laverick et al.	D10/78
4613913	September 1986	Phillips	360/51
4646015	February 1987	Phillips	324/253
4686642	August 1987	Buxton et al.	364/607
4734863	March 1988	Honey et al.	364/449
4788645	November 1988	Zavoli et al.	364/449
4796191	January 1989	Honey et al.	364/450
4811491	March 1989	Phillips et al.	33/366
4811613	March 1989	Phillips et al.	74/5.6
4914605	April 1990	Loughmiller, Jr. et al.	364/518
5204817	April 1993	Yoshida	364/449
5297051	March 1994	Arakawa et al.	364/449
5311195	May 1994	Mathis et al.	342/357
5546107	August 1996	Deretsky et al.	395/600
5905507	May 1999	Rossignac et al.	345/440

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On Packing R-trees, by Kbrahim Kamel, et al., Second International Conference on Information and Knowledge Management, Nov., 1993.
DOT: A Spatial Acess Method Using Fractals, by Christos Faloutsos, et al., International Conference on Data Engineering, Apr., 1991.
The R-tree: An Efficient and Robust Access Method for Points and Rectangles, by Norbert Beckmann, et al., 1990.
Direct Spatial Search on Pictorial Databases Using PAcked R-trees, by Nick Roussopoulos, et al., Conference on Managment of Data, May, 1985.
R-Trees: A Dynamic Index Struture For Spatial Searching, by Antonin Guttman, Proc. of the ACM-Sigmod 1984 International Conference on Management of Data, Jun., 1984.

ART-UNIT: 261
PRIMARY-EXAMINER: Nguyen; Phu K.
ATTY-AGENT-FIRM: Rolf; Devon A. Garmin Corporation

ABSTRACT:

A system and method for constructing an R-Tree index structure, and packing spatial data in the structure to permit parameters of the R-Tree to be constructed to be selected, within provided ranges, by an operator of the system. The spatial data features to be packed into the R-Tree constructed, are sorted, according to fractal geometry, and placed in a table of records. Each record is individually selected from the table, and data associated with each record is temporarily stored in one of a plurality of buffer storage locations according to a plurality of packing algorithms. The data in a buffer storage location is split, into first and second groups of data, upon the occurrence of one of a plurality of predetermined conditions. Data is selectively removed from the buffer for placement in the R-Tree being packed, such that data representing nearby geographical areas is most optimally clustered together. A portable electronic device such as a navigational aid, has a processor, a display, an input, and a memory, all housed by a housing, wherein the memory has spatial data indexed by an R-Tree index embedded therein.

12 Claims, 15 Drawing figures

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L3: Entry 65 of 78   File: USPT   Jul 29, 1997

US-PAT-NO: 5652911
DOCUMENT-IDENTIFIER: US 5652911 A

TITLE: Multinode distributed data processing system for use in a surface vehicle

DATE-ISSUED: July 29, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Van Venrooy; Roland T. H.	Eindhoven	N/A	N/A	NLX
Van Tooren; Petrus M. A.	Eindhoven	N/A	N/A	NLX

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
U.S. Philips Corporation	New York	NY	N/A	N/A	02

APPL-NO: 8/ 386605
DATE FILED: February 10, 1995

PARENT-CASE:
This is a continuation of application Ser. No. 07/868,747, filed on Apr. 14, 1992.

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
EP	91201224	May 22, 1991

INT-CL: [6] G06F 15/00
US-CL-ISSUED: 395/800; 395/80, 395/84, 395/200.01, 364/443, 364/423.09B
US-CL-CURRENT: 701/1; 700/245, 700/249, 701/200, 709/206
FIELD-OF-SEARCH: 395/800, 395/200, 395/80, 395/84, 395/800.28, 395/200.01, 364/443,
364/424.01, 364/424.03, 364/424.02

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| Search Selected | Search ALL |

	PAT-NO	ISSUE-D	PATENTEE-NAME	US-CL
☐	4819159	April 1989	Shipley et al.	395/182.17
☐	4901231	February 1990	Bishop et al.	395/650
☐	4954959	September 1990	Moroto et al.	364/449
☐	4962458	October 1990	Verstraete	364/443
☐	5075693	December 1991	McMillan et al.	342/457
☐	5093669	March 1992	Kajiyama	342/457
☐	5109344	April 1992	Kakihara et al.	364/449
☐	5128874	July 1992	Bhann et al.	364/461
☐	5157614	October 1992	Kashiwazaki et al.	364/443
☐	5159556	October 1992	Schorter	364/449
☐	5165018	November 1992	Simor	395/200.1
☐	5177685	January 1993	Davis et al.	364/443
☐	5184303	February 1993	Link	364/449

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Standard Microsystems Corporation of Hauppage, NY, USA, "Local Area Network Controller" COM 90C26, published in 1988 Components Catelog, pp. 207-222.
"Advanced Unix Programming", M. J. Rochkind, pp. 263-264.
Alegiani et al., "An In-Vehicle Navigation and Information System Utilizing Defined Software Services", Conf. Record of the First Vehicle Navigation & Information System 11, Sep. 1989, pp. A3-A8.
Computer Design, Feb. 15, 1988, pp. 51.
CD-ROM, Optical Publishing, Microsoft Press, Redmond, WV, 1987.
Blake et al., "Experimental Evaluation of a Real-Time Scheduler for a Multiprocessor System", IEEE Transactions of Software Engineering, vol. 17, No. 1, Jan. 1991, pp. 34-44.

Emrath, "Xylem: An Operating System for the Cedar Multiprocessor", IEEE Software, vol. 2, No. 4, Jul. 1985, pp. 30-37.
Ramamritham et al., "Efficient Scheduling Algorithms for Real-Time Multiprocessor Systems", IEEE Transactions of Parallel and Distributed Systems, vol. 1, No. 2, Apr. 1990, pp. 184-194.
Banahan et al., "Unix: the book", Sigma Technical Press, pp. 14-15, 82-87, 92-93, 96-99, 144-149, 246-255.
"Computer Disc-Interactive, A Designer's Overview", (J.M. Preston, Ed.; Kluwer Pub., 1991).

ART-UNIT: 232
PRIMARY-EXAMINER: Donaghue; Larry D.
ASSISTANT-EXAMINER: Follansbee; John
ATTY-AGENT-FIRM: Barschall; Anne E.

ABSTRACT:

A distributed data processing system in a surface vehicle comprises sensors, user I/O, data processing and mass storage of geographical data. Using a restricted library of system calls or primitives that can only be processed as unitary entities after deterministic transport control while keeping the transfer stateless, the distributed real-time operating system allows coexistent running of a plurality of processes that share localized processing power and/or a device, a sensor, I/O and/or file data.

17 Claims, 9 Drawing figures

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L3: Entry 55 of 78   File: USPT   Sep 1, 1998

US-PAT-NO: 5802492
DOCUMENT-IDENTIFIER: US 5802492 A

TITLE: Computer aided routing and positioning system

DATE-ISSUED: September 1, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
DeLorme; David M.	Yarmouth	ME	N/A	N/A
Gray; Keith A.	Dresden	ME	N/A	N/A

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
DeLorme Publishing Company, Inc.	Yarmouth	ME	N/A	N/A	02

APPL-NO: 8/ 661600
DATE FILED: June 11, 1996

PARENT-CASE:
CROSS REFERENCE TO RELATED PATENT APPLICATION This patent application is a
continuation-in-part (CIP) of the David M. DeLorme et al U.S. patent application Ser. No.
08/381,214 filed Jan. 31, 1995, now U.S. Pat. No. 5,559,707 for COMPUTER AIDED ROUTING
SYSTEM which is a CIP of the David M. DeLorme et al U.S. patent application Ser. No.
08/265,327 filed Jun. 24, 1994, now abandoned for COMPUTER AIDED MAP LOCATION SYSTEM and
the contents of these related patent applications are incorporated herein by reference.

INT-CL: [6] G01C 21/00, G08G 1/123
US-CL-ISSUED: 701/200; 701/201, 701/208, 701/211, 701/213, 340/990, 340/995
US-CL-CURRENT: 455/456; 340/990, 340/995, 701/201, 701/208, 701/211, 701/213
FIELD-OF-SEARCH: 364/443, 364/444.1, 364/444.2, 364/449.2, 364/449.3, 364/449.4,
364/449.5, 364/449.6, 364/449.7, 340/990, 340/995, 340/991, 340/993, 342/357, 342/457

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| Search Selected | | Search ALL |

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	5208756	May 1993	Song	364/449.1
☐	5543789	August 1996	Behr et al.	340/995
☐	5559707	September 1996	DeLorme et al.	364/443

ART-UNIT: 364
PRIMARY-EXAMINER: Nguyen; Tan Q.
ATTY-AGENT-FIRM: Caseiro; Chris A. Bohan; Thomas L.

ABSTRACT:

A Computer Aided Routing and Positioning System (CARPS) determines a route along selected
waypoints that include a travel origin and a travel destination and intermediate
waypoints therebetween. The selected waypoints may be uploaded to or downloaded from

various geocoding device[...] utilize the Global Positioni[...] stem (GPS). A CARPS database incorporates tr[...] information selected from a ran[...] f multimedia sources about the transportation routes, waypoints, and geographically locatable points of interest (POIs) selected by the user along the travel route. The CARPS software permits user selection of specified POI types within a user-defined region of interest and user selection of particular POIs from the selected types within the region of interest. The transportation routes, waypoints, POIs and region of interest are identifiable in the computer by coordinate locations of a selected geographical coordinate system. The CARPS software is constructed to present a user-customized travelog for preview on the computer display of the user-defined travel route. The travel planner can preview on the computer display a multimedia travelog particularly customized for the user-defined travel route including multimedia information on the transportation routes, waypoints, and POIs selected by the user. The user can engage in an iterative trip planning process of revising the route and previewing travelogs of revised travel routes until a satisfactory travel route is determined. Hardcopies of customized travel maps of the user-defined travel route can be used in conjunction with a GPS device which has been uploaded with selected waypoint data.

50 Claims, 35 Drawing figures

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L3: Entry 41 of 78   File: USPT   Sep 7, 1999

US-PAT-NO: 5948040
DOCUMENT-IDENTIFIER: US 5948040 A

TITLE: Travel reservation information and planning system

DATE-ISSUED: September 7, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
DeLorme; David M.	Yarmouth	ME	N/A	N/A
Gray; Keith A.	Dresden	ME	N/A	N/A
Ferguson; T. Angus	Portland	ME	N/A	N/A

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
DeLorme Publishing Co.	Yarmouth	ME	N/A	N/A	02

APPL-NO: 8/ 797471
DATE FILED: February 6, 1997

PARENT-CASE:
CROSS-REFERENCE TO RELATED APPLICATIONS This patent application is a continuation-in-part (CIP) of the David M. DeLorme et al. U.S. patent application Ser. No. 08/661,600 filed Jun. 11, 1996, for COMPUTER AIDED ROUTING AND POSITIONING SYSTEM, now U.S. Pat. No. 5,802,492 which is a CIP of the David M. DeLorme et al. U.S. patent application Ser. No. 08/381,214 filed Jan. 31, 1995 for COMPUTER AIDED ROUTING SYSTEM, now U.S. Pat. No. 5,559,707, issued Sep. 24, 1996, which is a CIP of the David M. DeLorme et al. U.S. patent application Ser. No. 08/265,327 filed Jun. 24, 1994 for COMPUTER AIDED MAP LOCATION SYSTEM now abandoned. This patent application is also a CIP of the Keith A. Gray U.S. patent application Ser. No. 08/521,828 filed on Aug. 31, 1995, for COMPUTERIZED ADDRESS LOCATION AND COMMUNICATION SYSTEM now abandoned. All of the cross-referenced applications have a common assignee who is the assignee of the present application. The contents of these related patent applications are incorporated herein by reference.

INT-CL: [6] G06F 19/00, G01C 21/00
US-CL-ISSUED: 701/201; 701/208, 701/211, 340/990, 705/5
US-CL-CURRENT: 701/201; 340/990, 701/208, 701/211, 705/5
FIELD-OF-SEARCH: 701/201, 701/202, 701/207, 701/208, 701/209, 701/211, 701/212, 701/213, 705/5, 705/6, 340/988, 340/989, 340/990, 340/995

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

[Search Selected] [Search ALL]

	PAT-NO	ISSUE-D	PATENTEE-NAME	US-CL
☐	4359631	November 982	Lockwood et al.	360/12
☐	4862357	August 1989	Ahlstrom et al.	705/6
☐	4926336	May 1990	Yamada	364/444
☐	5021953	June 1991	Webber et al.	705/6
☐	5172321	December 1992	Ghaem et al.	701/202
☐	5191523	March 1993	Whitesage	705/6
☐	5208756	May 1993	Song	364/449
☐	5231584	July 1993	Nimura et al.	364/444
☐	5237499	August 1993	Garback	705/5
☐	5243528	September 1993	Lefebvre	701/211
☐	5253166	October 1993	Dettebach et al.	705/5
☐	5272638	December 1993	Martin et al.	701/202
☐	5331546	July 1994	Webber et al.	705/6
☐	5353034	October 1994	Sato et al.	340/988
☐	5359527	October 1994	Takanabe et al.	364/449
☐	5369588	November 1994	Hayami et al.	701/209
☐	5422809	June 1995	Griffin et al.	705/5
☐	5444618	August 1995	Seki et al.	364/420
☐	5519619	May 1996	Seda	701/201
☐	5537324	July 1996	Nimura et al.	364/449
☐	5587911	December 1996	Asano et al.	364/444.2
☐	5724520	March 1998	Goheen	705/5

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Makulowich, John, "Traveling by Virtual Reservation," Washington Technology, Jan. 23, 1997, p. 42.
Knecht, Bruce, G., "Microsoft Puts Newspapers in Highanxiety.com," The Wall Street Journal, Jul. 15, 1996, pp. B1, B10.
"InforTravel Expands Service," Business Geographics, vol. 4, No. 6, Jun., 1996, p. 13.
DelRosso, Laura, "Firm Customizes Internet Res Link," Travel Weekly, vol. 55, No. 26, Apr. 1, 1996, pp. 43-44, 47.
"Casto Travel's Resource Library," www.casto.com.
"Sunnyside Computing, Inc.," www.itn.net.

ART-UNIT: 361
PRIMARY-EXAMINER: Nguyen; Tan
ATTY-AGENT-FIRM: Atwood; Pierce Caseiro; Chris A.

ABSTRACT:

Computerized travel reservation information and planning system that generates "map ticket" output in various media, for guidance and transactions en route. Such print or electronic documents can include bar or alphanumeric codes for automated recognition and/or access. WHERE?, WHO/WHAT?, WHEN? and HOW? menus enable flexible user inquiries accessing selectable geographic, topical, temporal and transactional data records and relational processing. Sub-menus provide further capabilities: e.g. routing, topical searching; searches of events calendars, almanacs, appointment books, related itinerary scheduling; trip budgeting issues, plus travel arrangement availabilities or other goods/services offers. Online communications links access updated or supplemental information on places, times, topics and other provider goods/service offers. Online computer-aided routing system enables input of selectable travel origin, destination, and waypoints to compute travel routes, available transportation services, costs, options, and schedules. A point-of-interest database lets users pick types of attractions or

accommodations within a [ ]-selected region around routes [ ]avel. Users engage in an iterative planning proce[ ] revising or editing travel plans, previewing travelogs of alternate routes, selecting point of interest parameters, comparing times and costs of transportation options, in order to achieve a satisfactory travel plan. The system provides printed or electronic output that may include any one or more of text itinerary, ordered set of travel maps, customized collection of information on points of interest information and a selected array of valid reservation confirmations, tickets and/or discount coupons coded with elements for automated recognition and processing. Mobile users, including GPS-linked users, can access the system via wireless communication units.

80 Claims, 16 Drawing figures

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US-PAT-NO: 4888698
DOCUMENT-IDENTIFIER: US 4888698 A

TITLE: Method for storing a parcelwise divided digital data base as well as of addressing a data parcel in a mass memory, and apparatus for carrying out the method

DATE-ISSUED: December 19, 1989

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Driessen; Leonardus M. H. E.	Eindhoven	N/A	N/A	NLX
Janse; Cornelis P.	Eindhoven	N/A	N/A	NLX
Lahaije; Paul D. M. E.	Eindhoven	N/A	N/A	NLX

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
U.S. Philips Corporation	New York	NY	N/A	N/A	02

APPL-NO: 7/ 110303
DATE FILED: October 19, 1987

FOREIGN-APPL-PRIORITY-DATA:

COUNTRY	APPL-NO	APPL-DATE
NL	8602654	October 23, 1986

INT-CL: [4] G06F 15/50
US-CL-ISSUED: 364/443; 364/200, 364/300, 340/995, 365/238
US-CL-CURRENT: 701/200; 340/995, 365/238, 707/104, 707/205
FIELD-OF-SEARCH: 364/443, 364/449, 364/200, 364/900, 364/518, 364/521, 340/995, 340/996, 73/178R

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

| Search Selected | Search ALL |

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
☐	3597745	August 1971	Lahrson et al.	340/172.5
☐	4550317	October 1985	Moriyama et al.	364/449
☐	4685068	August 1987	Greco, II et al.	364/518
☐	4692880	September 1987	Merz et al.	364/521
☐	4706198	November 1987	Thurman	364/439
☐	4737927	April 1988	Hanabusa et al.	364/443
☐	4773026	September 1988	Takahara et al.	364/518

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUN	US-CL
86/02764	May 1986	WOX	

OTHER PUBLICATIONS

T. Matsuyama et al., "A File Organization for Geographic Information Systems Based on Spatial Proximity", Computer Vision, Graphics & Image Processing, 6/26/84, No. 3, pp. 303-318.
Lauzon et al., "Two-Dimensional Run-Encoding for Quad Tree", Computer Vision, Graphics, and Image Processing, vol. 30, No. 1, Apr. 1985, pp. 56-59.

ART-UNIT: 234
PRIMARY-EXAMINER: Lall; Parshotam S.
ASSISTANT-EXAMINER: Trans; V. N.
ATTY-AGENT-FIRM: Briody; Thomas A. Haken; Jack E. Barschall; Anne E.

ABSTRACT:

A database is stored in a mass memory. For this purpose, it is first divided into main cells and then into base cells according to a predetermined regular division pattern. Each base cell is then checked to see whether its data content is sufficient to occupy substantially completely a storage parcel having a predetermined capacity. If this is the case, the base cell is thus accommodated in a storage parcel; if this is not the case, adjacent base cells are grouped until a storage parcel is occupied substantially completely. The operation of addressing a storage parcel is effected by the use of a main cell table in which address pointers are stored, each of which points to a base cell table. In the base cell table, an index is given for each base cell and this index indicates in which storage parcel the relevant base cell is accommodated. Each of these indices indicates a location in a data paracel list at which an address indicator is present, which indicates the location at which the relevant parcel is stored in the mass memory.

18 Claims, 9 Drawing figures

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USPT,PGPB,JPAB,EPAB,DWPI,TDBD	map and database	13969	L1